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EXAMINER	
DAVIS, MINH TAM B	
ART UNIT	PAPER NUMBER
1642	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/594,771	SHIMADA ET AL.	
	Examiner	Art Unit	
	MINH-TAM DAVIS	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *2,3,8 and 16-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-7 and 9-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/29/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election with traverse of Group B, claims 1, 4, 6, 9-12, SEQ ID NO:71, species gastric cancer, in the reply filed on 10/14/08 is acknowledged.

The traversal is on the ground(s) that the Office has not provided citation to any reference which is alleged to destroy the unique special technical feature of the presently claimed invention.

This is not found persuasive for the following reasons: Groups A-C are multiple products which do not share the same composition with each other. If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application will be considered as the main invention in the claims, see PCT article 17(3) (a) and 1.476 (c), 37 C.F.R. 1.475(b) and (d). Group I will be the main invention. After that, all other products and methods will be broken out as separate groups (see 37 CFR 1.475(d)).

The requirement is still deemed proper and is therefore made FINAL.

After review and reconsideration, a means for detecting SEQ ID NO:71, which means is an antibody is rejoined with the polypeptide of SEQ ID NO:71, in view that it is recited in the art (see Hestir et al, US20080014594A1). Further, the species esophageal, and breast cancer are rejoined with gastric cancer, in view that they are recited in the art (see Hestir et al, US20080014594A1).

Accordingly, Group B, claims 1, 4-7, 9-15, the polypeptide of SEQ ID NO:71, and an antibody thereof, species esophageal, breast or gastric cancer, are examined in the instant application.

The embodiment of claims 1, 4-7, 9-15, as drawn to: 1) a polypeptide other than SEQ ID NO:71, as recited in claim 1, and 2) a means for detecting or inhibiting the expression of a polypeptide as recited in claim 4, which means is a nucleic acid, and 3) colorectal cancer, as recited in claim 11, has been withdrawn from consideration as being drawn to non-elected invention.

Drawings

Applicant amends the specification on 09/29/06 to add color drawing. If Applicant wants drawings executed in color, Applicant is required to submit a petition, an appropriate fee, and three sets of color drawings or color photographs, as appropriate.

Color photographs and color drawings are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the following language as the first paragraph of the brief description of the drawings section of the specification:

> The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

Objection

Figures 18-20 are objected to, because they are not readable.

Claim Rejections - 35 USC § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-7, 9-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4-7, 9-12 are indefinite, because it is not clear in claims 4-5 how the sample is derived from a subject.

Claim Rejections - 35 USC § 112, First Paragraph, Scope

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4-7, 9-15 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the human esophageal cancer polypeptide of SEQ ID NO: 71, and a diagnostic kit for detecting esophageal cancer, comprising SEQ ID NO:71, does not reasonably provide enablement for 1) a human "solid cancer" polypeptide of SEQ ID NO:71, or 2) a diagnostic kit for detecting "solid cancer, breast or gastric cancer", and 3) a diagnostic kit for detecting solid cancer in "a sample derived from a subject, or in hemocytes or tissue", said kit comprising a human solid cancer polypeptide of SEQ ID NO:71, or "a partial peptide thereof ". The specification does not enable any person skilled in the art to which it pertains, or with which

it is most nearly connected, to make and use the invention commensurate in scope with these claims.

To comply with the enablement requirement of 35 U.S.C. § 112, first paragraph, the specification must enable one skilled in the art to make and use the claimed invention without undue experimentation. The claims are evaluated for enablement based on the Wands analysis. Many of the factors regarding undue experimentation have been summarized in *In re Wands*, 858 F.2d 731,8 USPQ2d 1400 (Fed.Circ.1988) as follows: (1) the nature of the invention, (2) the state of the prior art, (3) the predictability or lack thereof in the art, (4) the amount of direction or guidance present, (5) the presence or absence of working examples, (6) the quantity of experimentation necessary, (7) the relative skill of those in the art, and (8) the breadth of the claims.

The specification discloses that the polypeptide type 17 of SEQ ID NO:71, encoded by SEQ ID NO:70 reacts with a higher number of serum of **esophageal cancer** patients as compared to that of the serum of healthy individual (40% versus 21%, p.32, table 2 on page 33, p.33-34).

However, the specification does not have any data or objective evidence that the polypeptide type 17 of SEQ ID NO:71, reacts with a higher number of serum of **breast or gastric cancer** patients as compared to that of the serum of healthy individual (p.32, table 2 on page 33, p.33-34). Further, the specification does not have any data or objective evidence that SEQ ID NO: 71 is overexpressed in a tissue, including esophageal, breast or gastric cancer tissue, or hemocytes. The specification does not have any data or objective evidence that SEQ ID NO:71 could be used for preventing or treating esophageal, breast or gastric cancer.

The prior art, Hestir et al (US20080014594A1), teaches a polypeptide sequence which is 100% similar to SEQ ID NO:71, and is overexpressed in **lung cancer** tissue ((MPSRCH search result, 2008, us-10-594-771.71.rapbm, result 2, page 1, and Hestir et al , para 2, 174-179, and figures 1-6). Although the art recites diagnosis of esophageal, breast and gastrointestinal cancer, using the polypeptide, the art does not have any data showing overexpression of the polypeptide in said cancers.

A solid cancer polypeptide as recited in claim 1 is reasonably interpreted as a polypeptide detected in or specific for a solid cancer.

1. One cannot predict that the claimed polypeptide SEQ ID NO:71 would be detected in or could be used for diagnosis of **any solid cancer, including breast or gastric cancer**, as recited in claims 1, 4-6, 9-12. Similarly, one cannot predict that an antibody to SEQ ID NO:71 could be used for diagnosis of any solid cancer, including breast or gastric cancer, as recited in claims 4-7, 9-12.

One cannot extrapolate from detection of overexpression of SEQ ID NO: 71 by a patient serum having esophageal cancer, or overexpression of SEQ ID NO:71 in lung cancer tissue to detection of SEQ ID NO: 71 in any other solid cancer, or diagnosis of any solid cancer, including breast or gastric cancer, because different cancers have different etiology and characteristics, and mutation or amplification of a gene in a specific cancer is not necessarily the same as that for the same gene in another type of cancer. For example, Montesano, R et al,1996, Intl J Cancer, 69(3): 225-235, teach that two different forms of esophagus cancer, squamous cell carcinoma (SCC) and adenocarcinoma (ADC) have different etiological and pathological characteristics, and that a

comparison of p53 mutations in these two cancers shows that said mutations differ by their types, frequencies, distribution along the gene and impact on p53 protein structure (p.231, second column, first paragraph). Similarly, Burmer, GC et al, 1991, Environmental Health perspectives, 93: 27-31, teach that in contrast to sporadic colon carcinomas, mutations in c-Ki-ras are infrequently observed in carcinomas or areas of high-grade dysplasia in patients with chronic ulcerative colitis, and that differences in the frequency, and spectrum of mutations observed in sporadic colon carcinoma and pancreatic carcinoma suggest that a different class of carcinogens may be involved in the initiation of these two tumors (p.27, second column, last paragraph, bridging p.28). Busken, C et al, Digestive Disease Week Abstracts and Itinerary Planner, 2003, abstract No:850, teach that there is a difference in COX-2 expression with respect to intensity, homogeneity, localization and prognostic significance between adenocarcinoma of the cardia and distal esophagus, suggesting that these two cancers have different etiology and genetic constitution (last five lines of the abstract). Thus, based on the teaching in the art and in the specification, one cannot predict that SEQ ID NO:71 could be detected in or could be used for diagnosis of any solid cancer, including breast or gastric cancer.

2) Further, one cannot predict that overexpression of SEQ ID NO:71 could be detected in **"a sample derived from a subject"** as recited in claim 4**,** or in **"esophageal cancer tissue"** ", as encompassed in claim 12. Similarly, even if overexpression of SEQ ID NO:71 were detected by serum of a breast or gastric cancer patient, one cannot predict that SEQ ID NO:71 could be used for diagnosis of breast or gastric cancer, using " a sample derived from a subject"

as recited in claim 4, or " a tissue sample, including breast or gastric cancer tissue", as encompassed in claim 12.

One cannot predict that overexpression of SEQ ID NO:71 could be detected in esophageal, breast or gastric cancer tissue, because the level of a protein in a particular cancer tissue is not predictable, and is not necessarily the same as that in the serum, due to unknown factors, such as degradation rate of the polypeptide in serum.

Further, a sample "derived" from a subject as recited in claim 4, or " a tissue sample", as recited in claim 12, encompasses a sample or tissue to which esophageal, breast or gastric cancer cells have **metastasized** to. It is unpredictable that metastasized esophageal, breast or gastric cancer cells still express the claimed sequences, because expression of a sequence could be lost during the progression toward metastasis. For example, Kibel, AS et al, 2000, J urol, 164(1): 192-6 teach that gene expression in the chromosomal region 12p12-13 is different in primary and metastatic prostate cancer cells, and that inactivation in the chromosome region 12p12-13 occurs prior to metastasis. Similarly, Dong et al, 2000, Cancer Research, 60: 3880-3883, teach that deletion of a region in the chromosome 13q21 is associated with aggressive prostate cancer, as compared to less aggressive prostate cancer, such as primary prostate cancers that are not yet differentiated (abstract, and figure 1 on page 3882).Russo, V et al, 1995, Int J Cancer, 64: 216-221, teach that analysis of multiple metastatic lesions and primary breast tumors show that in some cases the MAGE gene expression is lost during metastasis, but in some other cases, in metastasis nodes derived from MAGE-negative primary tumors, MAGE gene expression is detected (abstract, and table II on page 220). Thus in view of the above, one cannot predict that the claimed sequences are useful for diagnosis of the presence in a subject of an invasive gastric

cancer.

Further, there is no evidence that **hemocytes** or any cells of the blood of an esophageal, breast or gastric cancer patient, as recited in claim 12, overexpress SEQ ID NO:71, because there is no evidence that said hemocytes are cancerous, and because expression level of a polypeptide in a particular cell or tissue, including cancer cell or tissue is not predictable. Iehle, C et al, 1999, J Steroid Biochem Mol Biol, 68: 189-195, teach that although the level of 5-alpha-reductase-1 is increased in prostate cancer tissue, the level of the isoform 5-alpha-reductase-2 is the same as that of normal prostate (abstract). Abbaszadegan, M R, et al, 1994, Cancer Res, 54: 4676-4679, teach that the level of multidrug resistance-associated protein (MRP) detected in malignant hematopoietic cells is similar to the level found in normal hematopoietic cells (p.4678, second column, last 6 lines of second paragraph).

3) Further, although the full length SEQ ID NO:71 is detected by serum of a patient having esophageal cancer, one cannot predict that its **partial peptide**, as recited in claim 6, would be detected by serum of a patient having esophageal cancer. Similarly, even if SEQ ID NO:71 were detected by serum of a breast or gastric cancer patient, one cannot predict that a partial peptide of SEQ ID NO:71, as recited in claim 6, could be used for diagnosis of breast or gastric cancer. Which epitope on SEQ ID NO:71 that immunoreacts with the antibody in esophageal cancer serum is not known, and therefore, one cannot predict that said antibody would recognize any partial peptide of SEQ ID NO:71, which partial peptide could be as small as a few amino acids. Screening assays do not enable the claimed invention because the court found in *Rochester v. Searle*, 358 F.3d 916, Fed Cir, 2004, that screening assays, and by

inference suggestions of structural analysis, are not sufficient to enable an invention because they are merely a wish or plan for obtaining the claimed chemical invention.

4) In addition, one cannot predict that SEQ ID NO:71 could be used successfully for **treating or preventing esophageal, breast or gastric cancer**, as encompassed in claims 13-15.

It is well known in the art that cancer immunotherapy is highly unpredictable. Mellman I, 2006, The Scientist, 20(1): 47-56, teaches that immunotherapy of cancer has yet to live up to expectations (p.47). Mellmann teaches that attempts at using cytokines to stimulate anticancer T cells, or deploying toxin-conjugated antibodies as magic bullets were never quite successful, and that therapeutic vaccines for cancer have proven similarly disappointing (p.47). Similarly, Lee et al, 1999, J Immunol, 163: 6292-6300, teach that although a quantifiable T-cell specific immune response is detected in melanoma patients, such a response does not associate with regression of metastatic melanoma (abstract, and Discussion on pages 6297-6299). Bodey et al, 2000, Anticancer Res, 20: 2665-2676, teach that although general immune activation against the target antigens has been documented in most cases, reduction of tumor load has not been frequently observed in human patients (abstract, second column, p.2673).

In addition, one cannot predict that the claimed inhibitory antibody could effectively **prevent solid cancer** development, because of the following reasons:

1) One does not know **which individual** is at risk of developing solid cancer, to administer the claimed inhibitory antibody to prevent developing cancer, and at what time in said individual's life to administer the claimed inhibitory antibody, and for how long, in view that the specification lacks description of how to assess human in risk of developing solid cancer, e.g.

assessment based on family health history and genetic screening of said individual at risk of solid cancer development. Therefore, one cannot determine when and for how long one of skill in the art should administer the claimed inhibitory antibody for preventing solid cancer development, and

2) There is **no correlation** between preventing development of solid cancer from a healthy individual who does not yet have cancer, and administration of the claimed inhibitory antibody, in view that the specification does not have any evidence that the claimed inhibitory antibody inhibits a step of carcinogenesis process leading to development of cancer.

MPEP 2164.03 teaches that "the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability of the art. In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). The amount of guidance or direction refers to that information in the application, as originally filed, that teaches exactly how to make or use the invention. The more that is known in the prior art about the nature of the invention, how to make, and how to use the invention, and the more predictable the art is, the less information needs to explicitly stated in the specification. In constrast, if little is known in the prior art about the nature of the invention and the art is unpredictable, the specification would need more detail as how to make and use the invention in order to be enabling."

Given the above unpredictability, and in view of the complex nature of the invention, a lack of sufficient disclosure in the specification, and little is known in the art concerning the claimed invention, there would be an undue quantity of experimentation required for one of skill in the art to practice the claimed invention, that is commensurate in scope of the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Hestir et al (US20080014594A1, which has as priority date 02/03/2003).

Claim 1 is as follows:

1. (Original) A human solid cancer antigenic polypeptide having the amino acid sequence of SEQ ID NO:71.

Hestir et al teach a polypeptide sequence, SEQ ID NO:5, which is 100% similar to the claimed SEQ ID NO:71, as shown by MPSRCH sequence similarity search (MPSRCH search result, 2008, us-10-594-771.71.rapbm, result 2, page 1). Further, although the nucleic acid encoding SEQ ID NO:5 taught by Hestir et al is only 61.6% similar to SEQ ID NO:70, as shown by MPSRCH search result, the polypeptide taught by Hestir et al inherently would be encoded by SEQ ID NO:70, because the coding region of which is the same as the nucleic acid sequence taught by Hestir et al (MPSRCH search result, 2008, us-10-594-771.70.rapbm, result 3, pages 1-2). Hestir et al further teach that the sequence is overexpressed in various cancer tissue, including lung cancer (para 2, 174-179, and figures 1-6).

Although the reference does not explicitly teach that the polypeptide is a human solid cancer antigenic polypeptide, however, the claimed polypeptide appears to be the same as the

prior art polypeptide. The office does not have the facilities and resources to provide the factual evidence needed in order to establish that the product of the prior art does not possess the same material, structural and functional characteristics of the claimed product. In the absence of evidence to the contrary, the burden is on the applicant to prove that the claimed product is different from those taught by the prior art and to establish patentable differences. See In re Best 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and Ex parte Gray 10 USPQ 2d 1922 (PTO Bd. Pat. App. & Int. 1989).

2. Claims 4, 5, 7, 10-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Hestir et al (US20080014594A1, which has as priority date 02/03/2003).

Claims 4, 5, 7, 10-15 are as follows:

4. (Original) A diagnostic kit for solid cancer comprising a means of detecting the expression of at least one human solid cancer antigenic polypeptide in a sample derived from a subject, characterized in that the human solid cancer antigenic polypeptide has the amino acid sequence of SEQ ID NO:71.

5. (Original) A diagnostic kit for solid cancer comprising a means of detecting the expression of at least one human solid cancer antigenic polypeptide in a sample derived from a subject, characterized in that the human solid cancer antigenic polypeptide is encoded by a polynucleotide having the nucleotide sequence of SEQ ID NO:70.

7. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the means of detecting the expression of the human solid cancer antigenic polypeptide is an antibody against the solid cancer antigenic polypeptide.

10. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the means of detecting the expression of the human solid cancer antigenic polypeptide is labeled.

11. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the solid cancer is esophageal, gastric or breast cancer.

12. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the sample is serum, blood, or tissue.

13. (Original) A medicament for preventing or treating solid cancer comprising a means of inhibiting the functions or expression of at least one human solid cancer antigenic polypeptide, characterized in that the human solid cancer antigenic polypeptide has the amino acid sequence of SEQ ID NO:71.

14. (Original) A medicament for preventing or treating solid cancer comprising a means of inhibiting the functions or expression of at least one human solid cancer antigenic polypeptide, characterized in that the human solid cancer antigenic polypeptide is encoded by a polynucleotide having the nucleotide sequence of SEQ ID NO: 70.

15. (Currently amended) The medicament according to claim 13, wherein the means of inhibiting the functions or expression of the human solid cancer antigenic polypeptide is an antibody against the solid cancer antigenic polypeptide.

The means of detecting the expression of the human solid polypeptide of SEQ ID NO:71, as recited in claims 4, 5, 7, 10-12, is interpreted as **an antibody** to SEQ ID NO:71.

The means of inhibiting the functions or expression of the human solid polypeptide of SEQ ID NO:71, as recited in claims 13-15, is interpreted as **an antagonist antibody** to SEQ ID NO:71.

Claims 4, 5, 7, 10-12 recite the claimed antibody to SEQ ID NO:71, formulated as a diagnostic kit for solid cancer. However, this limitation is viewed as a recitation of intended use and therefore is not given patentable weight in comparing the claims with the prior art. Claims 4-5, 7, 10-12 read on the ingredient per se, which is a kit comprising an antibody to SEQ ID NO: 71.

Claims 13-15 recite the claimed antagonist antibody of SEQ ID NO:71, formulated as a medicament for preventing or treating solid cancer. However, this limitation is viewed as a recitation of intended use and therefore is not given patentable weight in comparing the claims with the prior art. Claims 13-15 read on the ingredient per se, which is an inhibitory antibody to SEQ ID NO:71, or to a polypeptide encoded by SEQ ID NO: 70.

Hestir et al teach a polypeptide sequence, SEQ ID NO:5, which is 100% similar to the claimed SEQ ID NO:71, as shown by MPSRCH sequence similarity search, supra (MPSRCH search result, 2008, us-10-594-771.71.rapbm, result 2, page 1). Hestir et al teach a pharmaceutical composition comprising the polypeptide or an antibody thereof, which antibody could be an agonist or antagonist antibody and a kit comprising said antibody (para 138-139, 183-184, 206, 211). Hestir et al teach labeling of the antibody (para 166-167). Hestir et al teach diagnosis of various cancer, including lung, breast and cancer of gastrointestinal tract, such as esophagus, stomach, colon, and rectum, using the polypeptide or antibody thereof (para 180, 204). Hestir et al teach that genes that are differentially expressed in tissue can also be used as markers in body fluid, e.g., serum (para 111).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-7, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hestir et al (US20080014594A1, which has as priority date 02/03/2003), in view of Boga (US 6,998,241 B2)..

Claims 4-7, 9-12 are as follows:

4. (Original) A diagnostic kit for solid cancer comprising a means of detecting the expression of at least one human solid cancer antigenic polypeptide in a sample derived from a subject, characterized in that the human solid cancer antigenic polypeptide has the amino acid sequence of SEQ ID NO:71.

5. (Original) A diagnostic kit for solid cancer comprising a means of detecting the expression of at least one human solid cancer antigenic polypeptide in a sample derived from a subject, characterized in that the human solid cancer antigenic polypeptide is encoded by a polynucleotide having the nucleotide sequence of SEQ ID NO:70.

6. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the means of detecting the expression of the human solid cancer antigenic polypeptide is the solid cancer antigenic polypeptide.

7. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the means of detecting the expression of the human solid cancer antigenic polypeptide is an antibody against the solid cancer antigenic polypeptide.

9. (Currently amended) The diagnostic kit for solid cancer according to any one of claim 4, wherein the means of detecting the expression of the human solid cancer antigenic polypeptide is immobilized on a solid phase.

10. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the means of detecting the expression of the human solid cancer antigenic polypeptide is labeled.

11. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the solid cancer is esophageal, gastric or breast cancer.

12. (Currently amended) The diagnostic kit for solid cancer according to claim 4, wherein the sample is tissue.

The means of detecting the expression of the human solid polypeptide of SEQ ID NO:71, as recited in claims 4-7, 9-12, is interpreted as **the polypeptide of SEQ ID NO:71 or its antibody**.

Claims 4-7, 9-12 recite the claimed antibody to SEQ ID NO:71, formulated as a diagnostic kit for solid cancer, said cancer is esophageal, gastric or breast cancert. However, this limitation is viewed as a recitation of intended use and therefore is not given patentable weight in comparing the claims with the prior art. Claims 4-7, 9-12 read on the ingredient per se, which is a kit comprising the polypeptide of SEQ ID NO: 71, or its antibody.

Hestir et al teach a polypeptide sequence, SEQ ID NO:5, which is 100% similar to the claimed SEQ ID NO:71, as shown by MPSRCH sequence similarity search, supra (MPSRCH search result, 2008, us-10-594-771.71.rapbm, result 2, page 1). Hestir et al teach that the sequence is overexpressed in lung cancer tissue, as compared to normal lung sample (para 2, 174-179, and figures 1-6). Hestir et al teach a pharmaceutical composition comprising the polypeptide or an antibody thereof, which antibody could be an agonist or antagonist antibody and a kit comprising said antibody (para 138-139, 183-184, 206, 211). Hestir et al teach labeling of the antibody (para 166-167). Hestir et al teach a method for diagnosing a proliferative disease such as cancer, by providing an antibody, allowing the antibody to contact a patient sample, and detecting specific binding between the antibody and an antigen in the sample to determine whether the subject has proliferative disease such as cancer. Hestir et al teach a method for diagnosing a proliferative disease, by providing a polypeptide that specifically binds the

antibody, allowing the polypeptide to contact a patient sample and detecting specific binding between the polypeptide and any interacting molecule in the sample to determine whether the subject has a proliferative disease (para 196, 203).

Hestir et al do not teach **a kit** comprising SEQ ID NO:71, or a polypeptide encoded by SEQ ID NO: 70. Hestir et al do not teach that the polypeptide is **labeled**. Hestir et al do not teach **immobilization** of the antibody or the polypeptide on a solid phase.

Boga teaches an immunoassay such as enzyme immunoassay (EIA) or ELISA (column 2, second paragraph). Boga teaches that the antibody can be immobilized on a substrate, and that the immobilized antibody is used to bind to the target antigen (columns 6-9).

It would have been prima facia obvious for one of ordinary skill in the art at the time the invention was made to formulate the polypeptide in a kit for commercial application, such as detection of lung cancer. It would have been obvious to label the polypeptide for detecting its antibody in a sample suspected of having cancer, as suggested by Hestir et al. It would have been obvious that either the antibody or the polypeptide is immobilized on a substrate, using the method taught by Boga, for its use in immunoassay for detection of either the polypeptide or the antibody, respectively, in a sample.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH-TAM DAVIS whose telephone number is 571-272-0830. The examiner can normally be reached on 9:00 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, LARRY HELMS can be reached on 571-272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MINH TAM DAVIS
December 01, 2008

/Larry R. Helms/
Supervisory Patent Examiner, Art Unit 1643

MPSRCH search result, 2008, us-10-594-771.71.rapbm, result 2, page 1

```
RESULT 2
US-10-543-838-5
; Sequence 5, Application US/10543838
; Publication No. US20080014594A1
; GENERAL INFORMATION:
;  APPLICANT: HESTIR, KEVIN
```

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;  APPLICANT:  LEE, ERNESTINE
;  APPLICANT:  CHU, KETING
;  APPLICANT:  WANG, YAN
;  APPLICANT:  PIERCE, KRISTEN
;  APPLICANT:  COLLINS, AMY L.
;  APPLICANT:  WILLIAM, LEWIS T.
;  TITLE OF INVENTION: METHODS OF USE FOR HUMAN LUNG-EXPRESSED POLYPEPTIDES
;  FILE REFERENCE: 8940.0020-00000
;  CURRENT APPLICATION NUMBER: US/10/543,838
;  CURRENT FILING DATE:  2007-08-24
;  PRIOR APPLICATION NUMBER: PCT/US2004/02655
;  PRIOR FILING DATE: 2004-01-30
;  PRIOR APPLICATION NUMBER: 60/444,944
;  PRIOR FILING DATE: 2003-01-31
;  PRIOR APPLICATION NUMBER: 60/444,913
;  PRIOR FILING DATE: 2003-02-03
;  PRIOR APPLICATION NUMBER: 60/446,647
;  PRIOR FILING DATE: 2003-02-10
;  PRIOR APPLICATION NUMBER: 60/448,837
;  PRIOR FILING DATE: 2003-02-18
;  NUMBER OF SEQ ID NOS: 13
;  SOFTWARE: PatentIn Ver. 3.3
; SEQ ID NO 5
;   LENGTH: 288
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-543-838-5

  Query Match             100.0%;  Score 1526;  DB 5;  Length 288;
  Best Local Similarity   100.0%;  Pred. No. 1.6e-145;
  Matches  288;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Db          1 MQRRWVFVLLDVLCLLVASLPFAILTLVNAPYKRGFYCGDDSIRYPYRPDTITHGLMAGV 60

Qy         61 TITATVILVSAGEAYLVYTDRLYSRSDFNNYVAAVYKVLGTFLFGAAVSQSLTDLAKYMI 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 TITATVILVSAGEAYLVYTDRLYSRSDFNNYVAAVYKVLGTFLFGAAVSQSLTDLAKYMI 120

Qy        121 GRLRPNFLAVCDPDWSRVNCSVYVQLEKVCRGNPADVTEARLSFYSGHSSFGMYCMVFLA 180
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Qy        181 LYVQARLCWKWARLLRPTVQFFLVAFALYVGYTRVSDYKHHWSDVLVGLLQGALVAALTV 240
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MPSRCH search result, 2008, us-10-594-771.70.rapbm, result 3, pages 1-2

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RESULT 3
US-10-543-838-5
; Sequence 5, Application US/10543838
; Publication No. US20080014594A1
; GENERAL INFORMATION:
;  APPLICANT: HESTIR, KEVIN
;  APPLICANT:  LEE, ERNESTINE
;  APPLICANT:  CHU, KETING
;  APPLICANT:  WANG, YAN
;  APPLICANT:  PIERCE, KRISTEN
```

```
;  APPLICANT:  COLLINS, AMY L.
;  APPLICANT:  WILLIAM, LEWIS T.
;  TITLE OF INVENTION: METHODS OF USE FOR HUMAN LUNG-EXPRESSED POLYPEPTIDES
;  FILE REFERENCE: 8940.0020-00000
;  CURRENT APPLICATION NUMBER: US/10/543,838
;  CURRENT FILING DATE:  2007-08-24
;  PRIOR APPLICATION NUMBER: PCT/US2004/02655
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;  PRIOR APPLICATION NUMBER: 60/446,647
;  PRIOR FILING DATE: 2003-02-10
;  PRIOR APPLICATION NUMBER: 60/448,837
;  PRIOR FILING DATE: 2003-02-18
;  NUMBER OF SEQ ID NOS: 13
;  SOFTWARE: PatentIn Ver. 3.3
; SEQ ID NO 5
;   LENGTH: 288
;   TYPE: PRT
;   ORGANISM: Homo sapiens
US-10-543-838-5

Alignment Scores:
Pred. No.:              2.09e-96        Length:         288
Score:                  1526.00         Matches:        288
Percent Similarity:     100.0%          Conservative:   0
Best Local Similarity:  100.0%          Mismatches:     0
Query Match:            61.6%           Indels:         0
DB:                     5               Gaps:           0

US-10-594-771-70 (1-1327) x US-10-543-838-5 (1-288)

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Qy        160 CCCTTCGCTATCCTGACGCTGGTGAACGCCCCGTACAAGCGAGGATTTTACTGCGGGGAT 219
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Qy        220 GACTCCATCCGGTACCCCTACCGTCCAGATACCATCACCCACGGGCTCATGGCTGGGGTC 279
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Db         81 ArgLeuTyrSerArgSerAspPheAsnAsnTyrValAlaAlaValTyrLysValLeuGly 100

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Db        201 PhePheLeuValAlaPheAlaLeuTyrValGlyTyrThrArgValSerAspTyrLysHis 220

Qy        760 CACTGGAGCGATGTCCTTGTTGGCCTCCTGCAGGGGGCACTGGTGGCTGCCCTCACTGTC 819
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Db        221 HisTrpSerAspValLeuValGlyLeuLeuGlnGlyAlaLeuValAlaAlaLeuThrVal 240

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Qy        880 CTGGAACGGAAGCCCAGCCTGTCACTGACGTTGACCCTGGGCGAGGCTGACCACAACCAC 939
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